

Application No. 10/765,797

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AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Previously Presented) A heat-sensitive lithographic printing plate precursor comprising a support having a hydrophilic surface and a coating provided on the hydrophilic surface, said coating comprising in the order given a first layer containing an oleophilic resin soluble in an aqueous alkaline developer and a second layer capable of preventing the developer from penetrating into the first layer at unexposed areas, said second layer comprising a water-repellent compound selected from the group consisting of

- a polymer comprising siloxane and/or perfluoroalkyl monomeric units, and
- a block- or graft-copolymer comprising a poly- or oligo(alkylene oxide) and a block of poly- or oligosiloxane and/or perfluoroalkyl units and

wherein the alkali-solubility of said coating increases on heating and said coating comprises an infrared light absorbing dye comprising at least one perfluoroalkyl group, wherein the infrared light absorbing dye carries a charge and at least one perfluoroalkyl group is included in a counter ion and contains at least 6 fluorine atoms.

2-3. (Canceled)

4. (Currently Amended) A The heat-sensitive lithographic printing plate precursor according to claim 1 wherein at least one perfluoroalkyl group is covalently linked to the infrared light absorbing dye and further comprises at least one perfluoralkyl covalently bonded perfluoroalkyl group containing 6 more more fluorine atoms is included in a counter ion.

5. (Canceled)

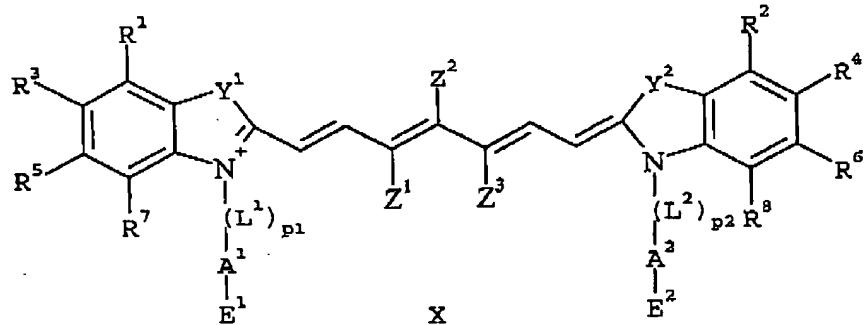
6. (Currently Amended) A The heat-sensitive lithographic printing plate precursor according to claim 1 wherein the amount of the water-repellent compound in the coating is between 0.5 and 15 mg/m².

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7. (Currently Amended) A The heat-sensitive lithographic printing plate precursor according to claim 1 wherein the second layer consists essentially of the water-repellent compound and the infrared light absorbing dye.

8. (Currently Amended) A The heat-sensitive lithographic printing plate precursor according to claim 1 wherein the infrared light absorbing dye corresponds to the following formula:



wherein

-L¹- and -L²- independently represent a divalent linking;

-E¹ and -E² independently represent a neutral, anionic or cationic terminal group selected from

alkyl, -OH, -H, -Cl, -Br, -F (neutral groups);

-SO₃⁻, -SO₄²⁻, -PO₃²⁻, -PO₄³⁻, -COO⁻ (anionic groups);

-[NR^aR^bR^c]⁺ (cationic group);

R^a, R^b and R^c independently represent a hydrogen atom or an alkyl group;

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-A¹- and -A²- independently represent -C_vF_{2v}- , -[(CF₂)₂-O]_w- ,
a long chain alkyl alkylene group containing at least four carbon atoms, or an optionally
substituted alkyl, alkenyl, aryl or aralkyl alkylene, alkenylene, arylene or aralkylene group;

with p₁ and p₂ are 0 or 1;

with v and w are 2 or an integer greater than 2;

-Y¹- and -Y²- independently represent -CR⁹R¹⁰- , -S-, -Se-, -NR¹¹-,
-CH=CH- or -O- ;

R¹ to R¹¹ each independently represent a hydrogen atom, an optionally substituted alkyl,
alkenyl, aryl or aralkyl group or a group selected from a halogen atom, NO₂, NO₂, -O-R^d, -
CO-R^d, -CO-O-R^d, -O-CO-R^d, -CO-NR^dR^e, -NR^dR^e, -NR^d-CO-R^e, -NR^d-CO-O-R^e, -NR^d-CO-
NR^eR^f, -SR^d, -SO-R^d, -SO₂-R^d, -SO₂-O-R^d, -SO₂NR^dR^e or a perfluoroalkyl group, each of
said groups may optionally comprise a terminal group E defined above as -E¹ and -E² and/or
wherein two adjacent groups selected from R¹, R², R³, R⁴, R⁵, R⁶, R⁷, R⁸, Y¹ and Y² together
form an optionally substituted 5- or 6- membered ring;

R^d, R^e and R^f independently represent a hydrogen or an optionally substituted alkyl, alkenyl,
aryl or aralkyl group;

Z¹ and Z³ each independently represent a hydrogen atom, an alkyl group or Z¹ and Z³
together represent the necessary atoms to complete an optionally substituted 5- or 6-
membered ring;

Z² represents a substituent selected from a hydrogen atom, an alkyl group, a halogen atom, an
amino group, an arylthio group, an alkylthio group, an aryloxy group, an alkoxy group, a
barbituric group or a thiobarbituric group, each of said groups being optionally substituted;

X represents one or more optional counter ions having a total charge opposite so as to make
the dye electrically neutral and wherein X optionally comprises a perfluoroalkyl group
containing at least 6 fluorine atoms;

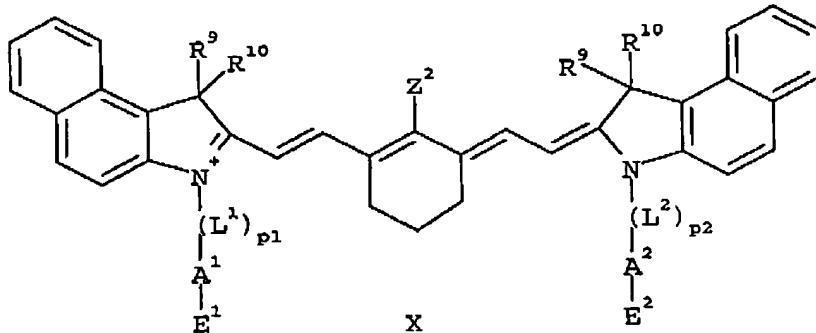
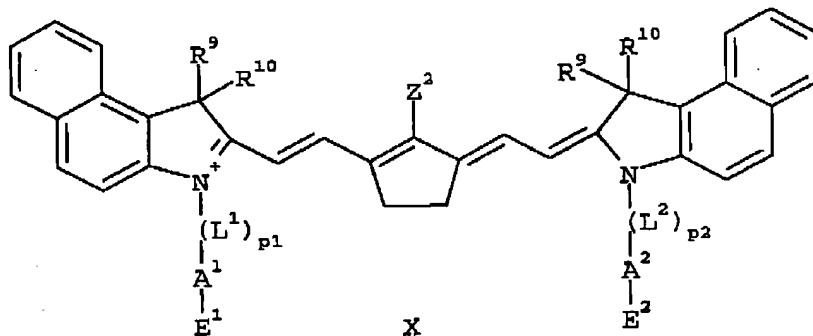
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~~with the proviso that at least one of the following substituents contains a perfluoroalkyl group: A^1 , A^2 , R^1 to R^{14} or X .~~

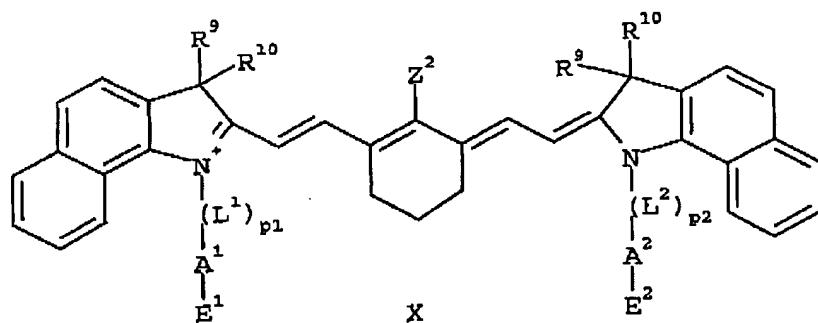
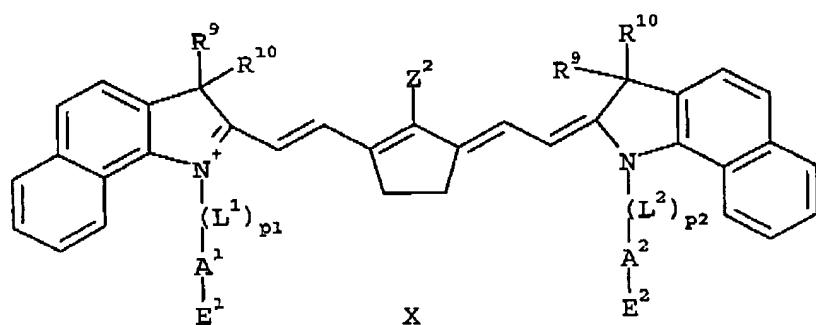
9. (Currently Amended) A The heat-sensitive lithographic printing plate precursor according to claim 8 claim 37 wherein $-Z^1$ and $-Z^3$ together represent $-(CH_2)_2-$ or $-(CH_2)_3-$.

10. (Currently Amended) A The heat-sensitive lithographic printing plate precursor according to claim 8 claim 9 wherein the IR light absorbing dye corresponds to one of the following formulae:



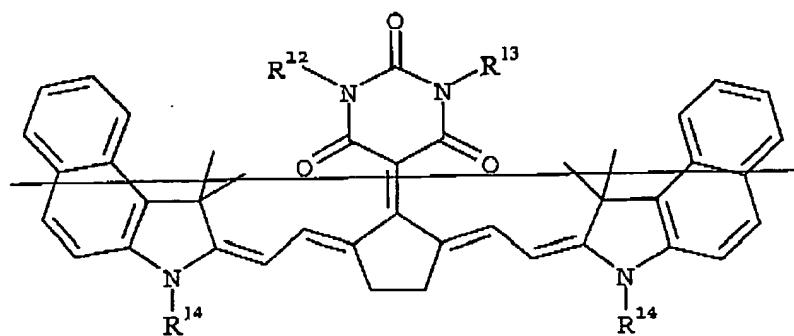
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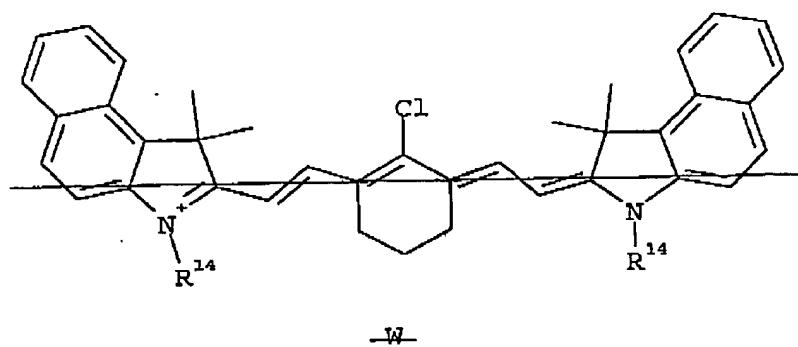
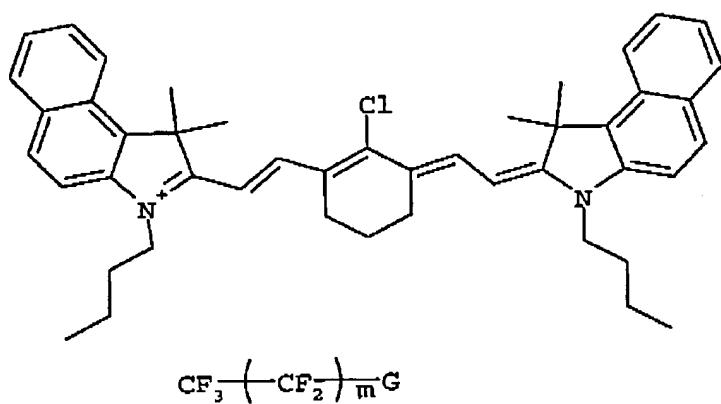
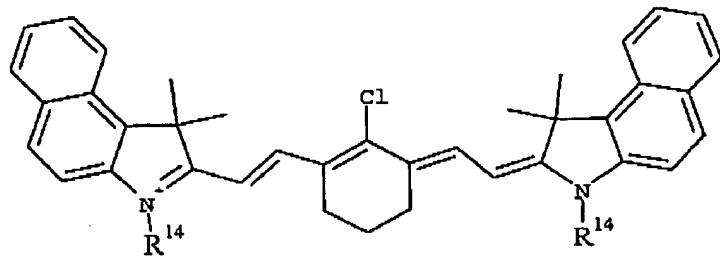
wherein p_1 , p_2 , L^1 , L^2 , A^1 , A^2 , E^1 , E^2 , R^9 , R^{10} , Z^2 and X have the same meaning as defined in claim 8.

11. (Currently Amended) A The heat-sensitive lithographic printing plate precursor according to claim 8 or claim 9 wherein the IR light absorbing dye corresponds to one of the following formulae:



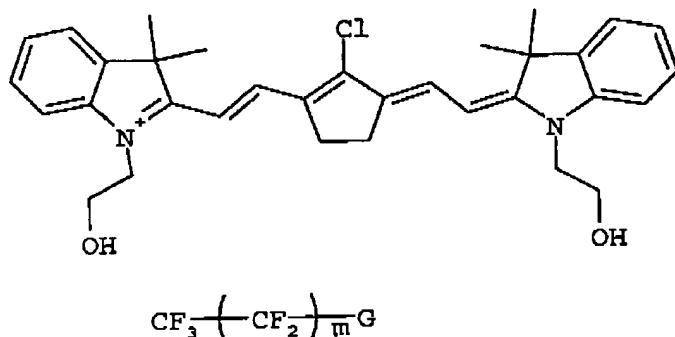
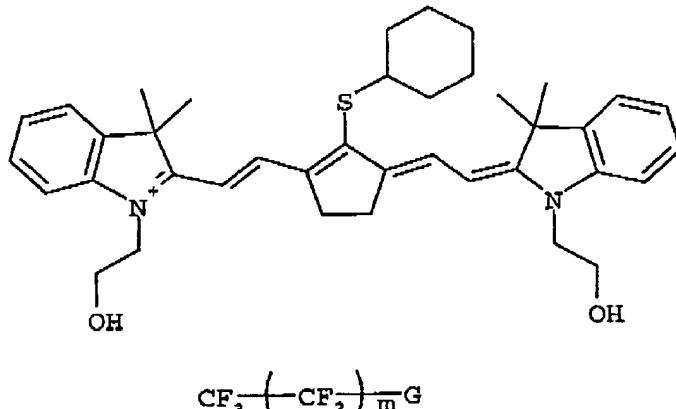
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 \overline{w}  $CF_3 \left(-CF_2 \right)_m G$  $CF_3 \left(-CF_2 \right)_m G$

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wherein

m is 2 or an integer greater than 2;

R¹² and R¹³ independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a perfluoroalkyl group which may optionally comprise a terminal group E defined as E¹ and E² in claim 8;

R¹⁴ represents -(CH₂)₂-OCO-(CH₂)₂-(CF₂)_k-CF₃;

with k is 2 or an integer greater than 2; and

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W represents Cl⁻, Br⁻, I⁻, F⁻, ClO₄⁻, BF₄⁻;

G represents SO₃⁻, SO₄⁻, SO₃⁻, SO₄⁻ or COO⁻.

12-16. (Canceled)

17. (Currently Amended) A The heat sensitive lithographic printing plate precursor according to claim 4 wherein the amount of the water-repellent compound in the coating is between 0.5 and 15 mg/m².

18-20. (Canceled)

21. (Currently Amended) A The heat sensitive lithographic printing plate precursor according to claim 4 wherein the second layer consists essentially of the water-repellent compound and the infrared light absorbing dye.

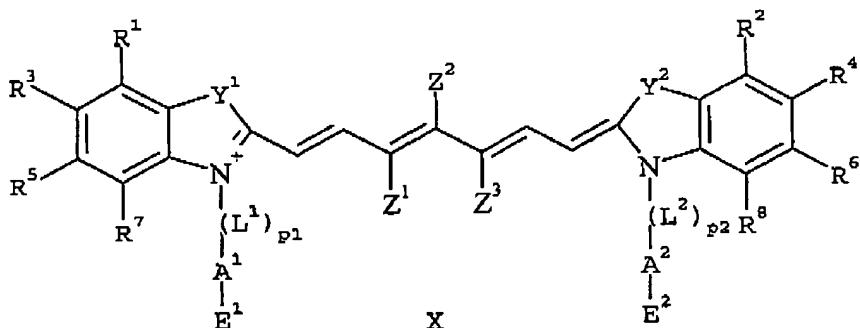
22. (Canceled)

23. (Currently Amended) A The heat sensitive lithographic printing plate precursor according to claim 6 wherein the second layer consists essentially of the water-repellent compound and the infrared light absorbing dye.

24. (Currently Amended) A The heat sensitive lithographic printing plate precursor according to claim 4 wherein the infrared light absorbing dye corresponds to the following formula:

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wherein

$-L^1$ - and $-L^2$ - independently represent a divalent linking;

$-E^1$ and $-E^2$ independently represent a neutral, anionic or cationic terminal group selected from

alkyl, -OH, -H, -Cl, -Br, -F (neutral groups);

$-SO_3^-$, $-SO_4^-$, $-PO_3^{2-}$, $-PO_4^{2-}$, $-COO^-$ (anionic groups);

$-[NR^aR^bR^c]^+$ (cationic group);

R^a , R^b and R^c independently represent a hydrogen atom or an alkyl group;

$-A^1$ - and $-A^2$ - independently represent $-C_vF_{2v}$, $-[(CF_2)_2-O]_w-$,

a long chain alkyl alkylene group containing at least four carbon atoms, or an optionally substituted alkyl, alkenyl, aryl or aralkyl alkylene, alkenylene, arylene or aralkylene group;

with p_1 and p_2 are 0 or 1;

with v and w are 2 or an integer greater than 2;

$-Y^1$ - and $-Y^2$ - independently represent $-CR^9R^{10}-$, $-S-$, $-Se-$, $-NR^{11}-$,

$-CH=CH-$ or $-O-$;

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R¹ to R¹¹ each independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a group selected from a halogen atom, -NO₂, -NO₂, -O-R^d, -CO-R^d, -CO-O-R^d, -O-CO-R^d, -CO-NR^dR^e, -NR^dR^e, -NR^d-CO-R^e, -NR^d-CO-O-R^e, -NR^d-CO-NR^eR^f, -SR^d, -SO-R^d, -SO₂-R^d, -SO₂-O-R^d, -SO₂NR^dR^e or a perfluoroalkyl group, each of said groups may optionally comprise a terminal group E defined above as -E¹ and -E² and/or wherein two adjacent groups selected from R¹, R², R³, R⁴, R⁵, R⁶, R⁷, R⁸, Y¹ and Y² together form an optionally substituted 5- or 6-membered ring;

R^d, R^e and R^f independently represent a hydrogen or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

Z¹ and Z³ each independently represent a hydrogen atom, an alkyl group or Z¹ and Z³ together represent the necessary atoms to complete an optionally substituted 5- or 6-membered ring;

Z² represents a substituent selected from a hydrogen atom, an alkyl group, a halogen atom, an amino group, an arylthio group, an alkylthio group, an aryloxy group, an alkoxy group, a barbituric group or a thiobarbituric group, each of said groups being optionally substituted;

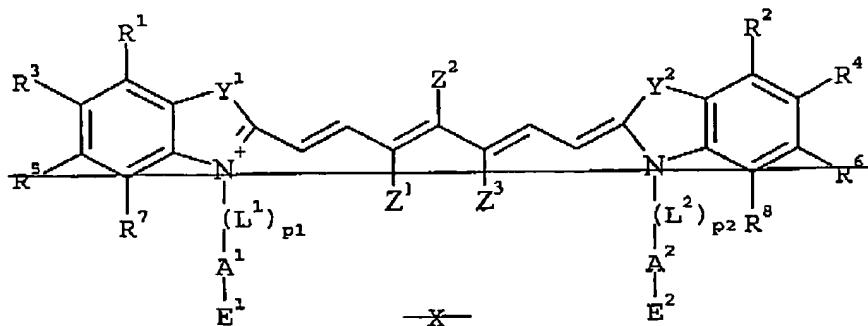
X represents one or more counter ions having a total charge opposite so as to make the dye electrically neutral and wherein X comprises a perfluoroalkyl group containing at least 6 fluorine atoms;

with the proviso that at least one of R¹ to R¹¹ contains a perfluoroalkyl group or at least one of -A¹- and -A²- contains a -C_yF_{2y}- group or a -[(CF₂)₂-O]_w- group.

25. (Currently Amended) A The heat sensitive lithographic printing plate precursor according to claim 36 claim 24 wherein, the infrared light absorbing dye corresponds to the following formula:

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wherein

~~L¹ and L² independently represent a divalent linking;~~~~E¹ and E² independently represent a neutral, anionic or cationic terminal group selected from~~~~alkyl, OH, H, Cl, Br, F (neutral groups);~~~~SO₃⁻, SO₄²⁻, PO₃²⁻, PO₄²⁻, COO⁻ (anionic groups);~~~~[NR^aR^bR^c]⁺ (cationic group);~~~~R^a, R^b and R^c independently represent a hydrogen atom or an alkyl group;~~~~A¹ and A² independently represent C_vF_{2v}, [(CF₃)₂O]_w,~~~~a long chain alkyl group containing at least four carbon atoms, or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;~~~~with p₁ and p₂ are 0 or 1;~~~~with v and w are 2 or an integer greater than 2;~~~~X¹ and X² independently represent CR⁹R¹⁰, S, Se, NR¹¹,~~~~CH=CH or O;~~

~~R¹ to R¹¹ each independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a group selected from a halogen atom, NO₂, O-R^d, CO-R^d, CO-O-R^d, O-CO-R^d, CO-NR^dR^e, NR^dR^e, NR^d-CO-R^e, NR^d-CO-O-R^e, NR^d-CO-NR^eR^f, SR^d, SO-~~

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~~R^d, SO₂-R^d, SO₂-O-R^d, SO₂NR^dR^e or a perfluoroalkyl group, each of said groups may optionally comprise a terminal group E defined above as -E¹ and -E² and/or wherein two adjacent groups selected from R¹, R², R³, R⁴, R⁵, R⁶, R⁷, R⁸, X¹ and Y² together form an optionally substituted 5- or 6-membered ring;~~
~~R^d, R^e and R^f independently represent a hydrogen or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;~~

~~Z¹ and Z³ each independently represent a hydrogen atom, an alkyl group or Z¹ and Z³ together represent the necessary atoms to complete an optionally substituted 5- or 6-membered ring;~~

~~Z² represents a substituent selected from a hydrogen atom, an alkyl group, a halogen atom, an amino group, an arylthio group, an alkylthio group, an aryloxy group, an alkoxy group, a barbituric group or a thiobarbituric group, each of said groups being optionally substituted;~~

~~X represents one or more counter ions having a total charge opposite to the dye and wherein X comprises a perfluoroalkyl group containing at least 6 fluorine atoms;~~

~~with the proviso that at least one of the following substituents contains a perfluoroalkyl group:~~

~~-A¹⁺, A²⁻, or R¹ to R¹¹.~~

26. (Canceled)

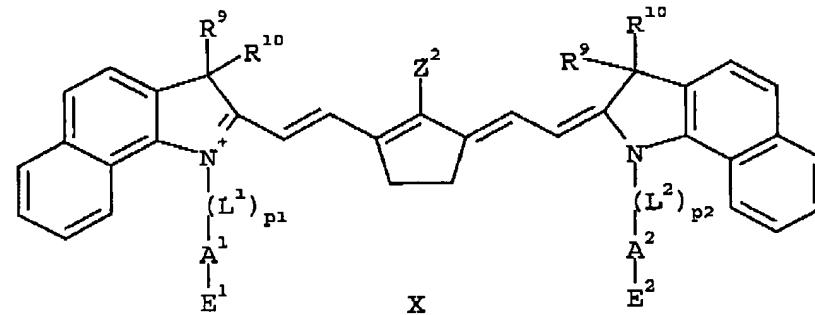
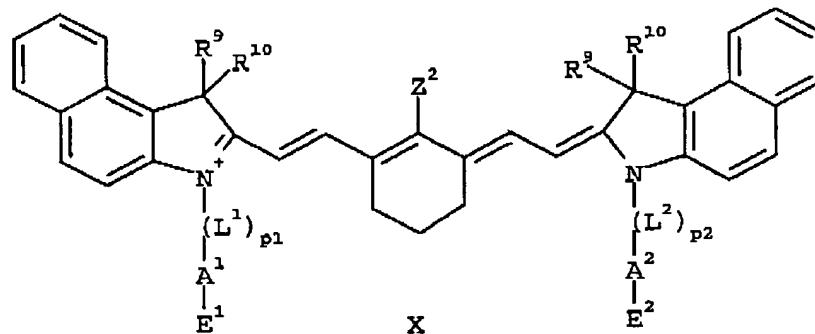
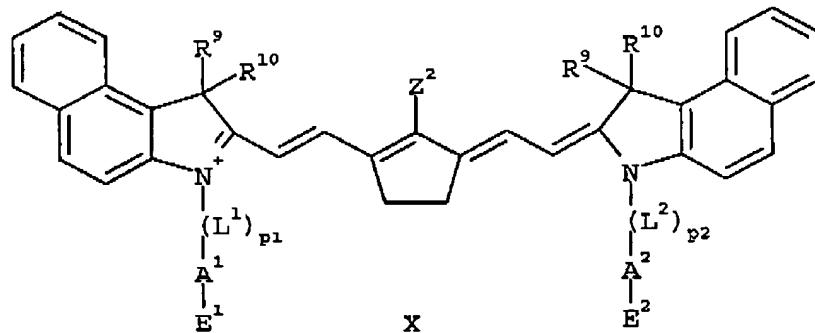
27. (Currently Amended) A The heat sensitive lithographic printing plate precursor according to ~~claim 24~~ claim 25, wherein -Z¹ and -Z³ together represent -(CH₂)₂- or -(CH₂)₃-.

28-29. (Canceled)

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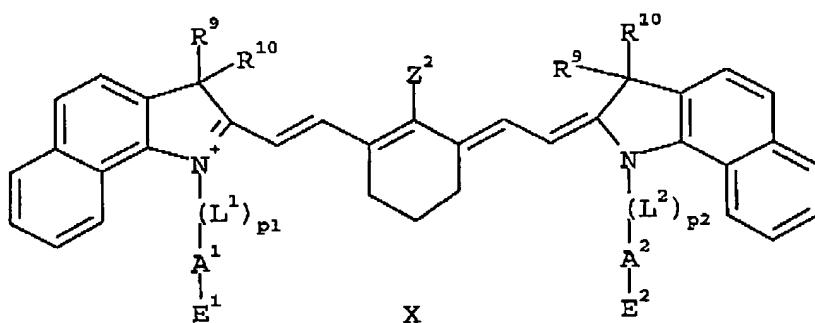
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30. (Currently Amended) A The heat sensitive lithographic printing plate precursor according to claim 27 wherein the IR light absorbing dye corresponds to one of the following formulae:



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wherein—-L¹ and -L² independently represent a divalent linking;-E¹ and -E² independently represent a neutral, anionic or cationic terminal group selected fromalkyl, -OH, -H, -Cl, -Br, -F (neutral groups);-SO₃⁻, -SO₄²⁻, -PO₃²⁻, -PO₄³⁻, -COO⁻ (anionic groups);-[NR^aR^bR^c]^{z+} (cationic group);R^a, R^b and R^c independently represent a hydrogen atom or an alkyl group;-A¹ and -A² independently represent -C_vF_{2v}, -[(CF₃)₂O]_w,
a long chain alkyl group containing at least four carbon atoms, or an optionally substituted
alkyl, alkenyl, aryl or aralkyl group;with p₁ and p₂ are 0 or 1;with v and w are 2 or an integer greater than 2;

R⁹ and R¹⁰ each independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a group selected from a halogen atom, -NO₂, -NO₂, -O-R^d, -CO-R^d, -CO-O-R^d, -O-CO-R^d, -CO-NR^dR^e, -NR^dR^e, -NR^d-CO-R^e, -NR^d-CO-O-R^e, -NR^d-CO-NR^eR^f, -SR^d, -SO-R^d, -SO₂-R^d, -SO₂-O-R^d, -SO₂NR^dR^e or a perfluoroalkyl group, each of said groups may optionally comprise a terminal group E defined above as -E¹ and -E²; R^d, R^e and R^f independently represent a hydrogen or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

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~~Z² represents a substituent selected from a hydrogen atom, an alkyl group, a halogen atom, an amino group, an arylthio group, an alkylthio group, an aryloxy group, an alkoxy group, a barbituric group or a thiobarbituric group, each of said groups being optionally substituted;~~

~~X represents one or more counter ions having a total charge opposite to the dye and wherein X comprises a perfluoroalkyl group containing at least 6 fluorine atoms.~~

31-36. (Canceled)

37. (New) The heat-sensitive lithographic printing plate precursor according to claim 8 wherein -Z¹ and -Z³ together represent the necessary atoms to complete an optionally substituted 5- or 6-membered ring.